| L Number | Hits | Search Text | DB | Time stamp |
|---|---|---|---|---|
| 1 | 12791 | 623/$?.ccls. | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2002/02/14 14:18 |
| 7 | 739 | 623/$?.ccls. and hydrogel | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2002/02/14 14:19 |
| 13 | 31 | (623/$?.ccls. and hydrogel) and (calcium adj ion$5) | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2002/02/14 14:20 |
| 19 | 0 | ((623/$?.ccls. and hydrogel) and (calcium adj ion$5)) and alignate | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2002/02/14 14:20 |
| 25 | 0 | (623/$?.ccls. and hydrogel) and alignate | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2002/02/14 14:21 |
| 31 | 59 | (623/$?.ccls. and hydrogel) and alginate | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2002/02/14 14:21 |
| 37 | 49 | ((623/$?.ccls. and hydrogel) and alginate) and calcium | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2002/02/14 14:21 |
| 43 | 20 | (((623/$?.ccls. and hydrogel) and alginate) and calcium) and ((623/$?.ccls. and hydrogel) and (calcium adj ion$5)) | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2002/02/14 14:25 |
| 49 | 0 | ((((623/$?.ccls. and hydrogel) and alginate) and calcium) and ((623/$?.ccls. and hydrogel) and (calcium adj ion$5))) and alignate.clms. | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2002/02/14 14:26 |
| 55 | 0 | ((((623/$?.ccls. and hydrogel) and alginate) and calcium) and ((623/$?.ccls. and hydrogel) and (calcium adj ion$5))) and alginate.clms. | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2002/02/14 14:26 |
| 61 | 0 | ((((623/$?.ccls. and hydrogel) and alginate) and calcium) and ((623/$?.ccls. and hydrogel) and (calcium adj ion$5))) and calcium.clms. | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2002/02/14 14:26 |
| 67 | 7 | hydrogel and alignate and cross$5 and calcium | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2002/02/14 14:29 |
| 73 | 116 | (sodium adj alignate) or (potassi$5 adj alignate) | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2002/02/14 14:30 |
| 79 | 54 | ((sodium adj alignate) or (potassi$5 adj alignate)) and calcium | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2002/02/14 14:30 |
| 85 | 2 | (((sodium adj alignate) or (potassi$5 adj alignate)) and calcium) and hydrogel | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2002/02/14 14:39 |
| 93 | 18264 | hydrogel | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2002/02/14 14:40 |
| 99 | 1899 | hydrogel and alginate | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2002/02/14 14:40 |

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|---|---|---|---|---|
| 105 | 1274 | (hydrogel and alginate) and calcium | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2002/02/14 14:40 |
| 111 | 1086 | ((hydrogel and alginate) and calcium) and cross$10 | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2002/02/14 14:42 |
| 112 | 3 | (((hydrogel and alginate) and calcium) and cross$10) and (calcium adj releas$10) | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2002/02/14 14:54 |
| 118 | 168 | (((hydrogel and alginate) and calcium) and cross$10) and (calcium adj Ion$5) | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2002/02/14 14:56 |
| 124 | 142 | ((((hydrogel and alginate) and calcium) and cross$10) and (calcium adj Ion$5)) and three$15 | USPAT; US-PGPUB; EPO; JPO; DERWENT | 2002/02/14 14:58 |

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|---|---|---|---|---|---|---|---|
| US 5578314 A | 19961126 | 25 | Multiple layer alginate coatings of biological tissue for transplantation | | 424/424 | 264/4.1 ; 424/423 ; 435/1.1 ; | Cochrum, Kent C. , et al. |
| US 5587175 A | 19961224 | 11 | Medical uses of in situ formed gels | | 424/427 | 424/430 ; 424/436 ; 424/486 | Viegas, Tacey X. , et al. |
| US 5658343 A | 19970819 | 14 | Areal implant | | 623/23.72 | | Hauselmann, Hans Jorg , et al. |
| US 5855613 A | 19990105 | 20 | Retrievable bioartificial implants having dimensions allowing rapid | diffusion of | 623/23.72 | 424/424 ; 435/1.1 ; 435/182 | Antanavich, Richard D. , et al. |
| US 5944754 A | 19990831 | 9 | Tissue re-surfacing with hydrogel-cell compositions | | 623/23.76 | 602/48 ; 602/49 ; 604/28 ; 60 | Vacanti, Charles A. |
| US 5958443 A | 19990928 | 12 | Medical uses of in situ formed gels | | 424/427 | 424/430 ; 424/436 ; 424/497 | Viegas, Tacey X. , et al. |
| US 6027744 A | 20000222 | 16 | Guided development and support of hydrogel-cell compositions | | 424/426 | 623/13.11 ; 623/15.12 ; 623/ | Vacanti, Charles A. , et al. |
| US 6060534 A | 20000509 | 7 | Medical devices comprising ionically and non-ionically crosslinked | polymer hyc | 523/113 | 424/422 ; 424/78.17 ; 523/10 | Ronan, John M. , et al. |
| US 6129761 A | 20001010 | 15 | Injectable hydrogel compositions | | 623/23.72 | 424/426 ; 424/93.7 ; 623/66. | Hubbell, Jeffrey A. |
| US 6165225 A | 20001226 | 22 | Retrievable bioartificial implants having dimensions allowing rapid | diffusion of | 623/23.72 | | Antanavich, Richard D. , et al. |
| US 6184266 B1 | 20010206 | 8 | Medical devices comprising cross-linked hydrogels having improved | mechanic | 523/113 | 424/422 ; 424/78.17 ; 523/13 | Ronan, John M. , et al. |
| US 4273734 A | 19810616 | 4 | Casting of polyelectrolytes in hydrogel molds | | 204/483 | 264/1.1 ; 264/330 ; 264/331. | Seiderman, Maurice |
| US 4443339 A | 19840417 | 10 | Composite materials | | 210/635 | 210/658 ; 210/679 | Rosevear, Alan |
| US 4778749 A | 19881018 | 8 | Tissue culture and production in permeable gels | | 435/2 | 435/382 ; 435/70.21 ; 435/70 | Vasington, Paul J. , et al. |
| US 4902295 A | 19900220 | 8 | Transplantable artificial tissue | | 623/23.72 | 424/530 ; 424/556 ; 435/178 | Walthall, Bennie J. , et al. |
| US 5084350 A | 19920128 | 9 | Method for encapsulating biologically active material including cells | | 428/402.2 | 264/4.1 ; 264/4.32 ; 264/4.33 | Chang, Thomas M. S. , et al. |
| US 5089606 A | 19920218 | 15 | Water-insoluble polysaccharide hydrogel foam for medical applications | | 536/54 | 424/44 ; 424/445 ; 604/85 | Cole, Susan M. , et al. |
| US 5102666 A | 19920407 | 9 | Calcium polycarbophil controlled release composition and method | | 424/487 | 424/422 ; 424/435 ; 424/440 | Acharya, Ramesh N. |
| US 5464629 A | 19951107 | 7 | Method of forming hydrogel particles having a controlled size using | liposomes | 424/450 | 424/489 ; 424/499 ; 428/402. | Monshipouri, Mariam , et al. |
| US 5502082 A | 19960326 | 18 | Low density materials having good compression strength and articles | formed t | 521/141 | 536/3 ; 536/45 ; 536/46 ; 536 | Unger, Peter D. , et al. |
| US 5516532 A | 19960514 | 8 | Injectable non-immunogenic cartilage and bone preparation | | 424/548 | 424/423 ; 424/426 ; 424/549 | Atala, Anthony , et al. |
| US 5876742 A | 19990302 | 20 | Biological tissue transplant coated with stabilized multilayer alginate | coating su | 424/424 | 264/4.1 ; 435/182 ; 435/382 | Cochrum, Kent C. , et al. |
| US 6171610 B1 | 20010109 | 22 | Guided development and support of hydrogel-cell compositions | | 424/426 | | Vacanti, Charles A. , et al. |
| US 6333194 B1 | 20011225 | 30 | Hydrogel compositions for controlled delivery of virus vectors and methods | of u | 435/450 | 424/1.25 ; 424/1.33 ; 424/1.5 | Levy, Robert J. , et al. |

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(FILE 'HOME' ENTERED AT 15:28:36 ON 14 FEB 2002)

FILE 'MEDLINE, AGRICOLA, CANCERLIT, SCISEARCH, CAPLUS, BIOSIS, MEDICONF'
ENTERED AT 15:28:53 ON 14 FEB 2002
L1 2 S HYDROGEL AND ALIGNATE
L2 735 S HYDROGEL AND ALGINATE
L3 279 S L2 AND CALCIUM
L4 35 S L3 AND THREE?
L5 20 DUP REM L4 (15 DUPLICATES REMOVED)
L6 20 SORT L5 PY

FILE 'STNGUIDE' ENTERED AT 15:37:13 ON 14 FEB 2002

FILE 'MEDLINE, AGRICOLA, CANCERLIT, SCISEARCH, CAPLUS, BIOSIS, MEDICONF'
ENTERED AT 15:37:46 ON 14 FEB 2002
E PETER MA?/AU
E PETER X?/AU
E MA PETER?/AU
L7 42 S E2
L8 34 DUP REM L7 (8 DUPLICATES REMOVED)
L9 34 SORT L8 PY
L10 4 S L9 AND (HYDROGEL OR ALGINATE)

=> d an ti so au ab pi l10 1-4

L10 ANSWER 1 OF 4 CAPLUS COPYRIGHT 2002 ACS
AN 2001:417069 CAPLUS
DN 135:33965
TI Ionically crosslinked **hydrogels** with adjustable gelation time
SO PCT Int. Appl., 29 pp.
CODEN: PIXXD2
IN **Ma, Peter X.**
AB Biocompatible **hydrogels**, for: scaffoldings for tissue engineering; cell encapsulation matrixes; injectable bulking materials for cosmetic and functional restorations; controlled release matrixes; gene delivery vehicles; immunoprotection matrixes; immobilization materials; food additives; medical gels; conductive electrode gels; lubricious coatings; film forming creams; membranes; superabsorbents; hydrophilic coatings; and wound dressings. The **hydrogels** include: at least one water-sol. polymer/copolymer; and at least one slow and/or fast dissolving and/or releasing divalent and/or multivalent cation-contg. compd. At least one of the monomers is an acid, and/or contains an acid group or a deriv. thereof, e.g., **alginate**. Such monomer reacts with the cations to form a three-dimensional ionically crosslinked **hydrogel** compn. A method for prepg. such a compn. comprises the step of controlling a rate of gel formation by varying at least one of: soly. of the cation contg. compds.; cation concn.; mixt. of cation contg. compds.; polymer concn.; gelation temp.

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI WO 2001040370 | A2 | 20010607 | WO 2000-US31635 | 20001117 |

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

WO 0140370

S.Kaushal AU1636

L10 ANSWER 2 OF 4 CAPLUS COPYRIGHT 2002 ACS
AN 2000:798328 CAPLUS
TI Diffusivity of 3D, ionically crosslinked **alginate hydrogels**.
SO Abstr. Pap. - Am. Chem. Soc. (2000), 220th, POLY-232
CODEN: ACSRAL; ISSN: 0065-7727
AU Kuo, Catherine K.; **Ma, Peter X.**
AB Homogeneous scaffolds are necessary in tissue engineering to ensure structural integrity, uniform distribution of the cells, and also uniform porosity throughout the scaffold. Our previous work has demonstrated formation of homogeneous **alginate** gels by a slow gelation system with control over mech. properties and homogeneity. In this work we studied the influence of polymer concn. on the diffusional properties of the homogeneous, ionically crosslinked **alginate** gels. Diffusion expts. were carried out with vitamin B12 and FITC-dextran with mol. wts. of 1355 and 9500, resp. The diffusion coeff. of FITC-dextran through the gels of higher **alginate** concn. was significantly lower than that with lower **alginate** concn. This trend was not seen in vitamin B12 studies. These results demonstrated that structural parameters can be varied to potentially control the diffusivity of large mols. such as proteins or growth factors which are important to cell growth and tissue development.

L10 ANSWER 3 OF 4 CAPLUS COPYRIGHT 2002 ACS
AN 2000:594144 CAPLUS
DN 133:313591
TI Diffusivity of three-dimensional, ionically crosslinked **alginate hydrogels**
SO Polym. Prepr. (Am. Chem. Soc., Div. Polym. Chem.) (2000), 41(2), 1661-1662
CODEN: ACPPAY; ISSN: 0032-3934
AU Kuo, Catherine K.; **Ma, Peter X.**
AB This work show that ionically crosslinked Ca **alginate** gels formed with controllable mech. properties, homogeneity, swelling behavior and permeability can be tailored specifically for tissue engineering or other biomedical applications.

L10 ANSWER 4 OF 4 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
AN 2001:151960 BIOSIS
TI Ionically crosslinked **alginate hydrogels** as scaffolds for tissue engineering: Part 1. Structure, gelation rate and mechanical properties.
SO Biomaterials, (March, 2001) Vol. 22, No. 6, pp. 511-521. print.
ISSN: 0142-9612.
AU Kuo, Catherine K.; **Ma, Peter X. (1)**
AB **Alginate** gels have been used in both drug delivery and cell encapsulation applications in the bead form usually produced by dripping **alginate** solution into a CaCl2 bath. The major disadvantages to these systems are that the gelation rate is hard to control; the resulting structure is not uniform; and mechanically strong and complex-shaped 3-D structures are difficult to achieve. In this work controlled gelation rate was achieved with CaCO3-GDL and CaSO4-CaCO3-GDL systems, and homogeneous **alginate** gels were formulated as scaffolds with defined dimensions for tissue engineering applications. Gelation rate increased with increasing total calcium content, increasing proportion of CaSO4, increasing temperature and decreasing **alginate** concentration. Mechanical properties of the **alginate** gels were controlled by the compositional variables. Slower gelation systems generate more uniform and mechanically stronger gels than faster gelation systems. The compressive modulus and strength increased with **alginate** concentration, total calcium content, molecular weight and guluronic acid (G) content of the **alginate**. MC3T3-E1 osteoblastic cells were uniformly incorporated in the **alginate** gels and cultured in vitro. These results demonstrated how **alginate** gel and gel/cell systems could be formulated with controlled structure, gelation rate, and

mechanical properties for tissue engineering and other biomedical applications.

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FILE 'MEDLINE, AGRICOLA, CANCERLIT, SCISEARCH, CAPLUS, BIOSIS, MEDICONF'
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L1 2 S HYDROGEL AND ALIGNATE
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L5 20 DUP REM L4 (15 DUPLICATES REMOVED)
L6 20 SORT L5 PY

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L6 ANSWER 4 OF 20 SCISEARCH COPYRIGHT 2002 ISI (R)
AN 95:439375 SCISEARCH
TI DENSITY DISTRIBUTION OF **CALCIUM**-INDUCED **ALGINATE** GELS - A NUMERICAL STUDY
SO BIOPOLYMERS, (JUL 1995) Vol. 36, No. 1, pp. 17-41.
ISSN: 0006-3525.
AU MIKKELSEN A (Reprint); ELGSAETER A
AB Charged polysaccharides often form **hydrogels** in the presence of cations. In many applications the polymer network density distribution and associated physical properties are of major practical importance. Depending on the detailed conditions, the resulting gel density may vary from fully homogeneous to strongly inhomogeneous.

We have established a simple set of coupled chemical reaction-diffusion equations to model the gelling process of **calcium**-induced **alginate** gels. The necessary algorithms for numerical solution of the resulting simultaneous parabolic differential equations have been developed both for one-dimensional models and **three**-dimensional models with cylindrical or spherical symmetry. The algorithms make use of the Crank-Nicolson implicit finite difference method. The results of the numerical analyses of the gel formation can be divided into several different regimes depending on the physical and chemical parameters of the **alginates** and the cations. The numerical results are in good agreements with reported experimental results. (C) 1995 John Wiley & Sons, Inc.

L6 ANSWER 5 OF 20 CAPLUS COPYRIGHT 2002 ACS
AN 1995:869435 CAPLUS
DN 123:260244
TI Low-density crosslinked porous **hydrogel** polymer materials having good compression strength and articles formed therefrom
SO PCT Int. Appl., 39 pp.
CODEN: PIXXD2
IN Unger, Peter D.; Rohrbach, Ronald P.
AB The title materials are prepd. by dissolving a **hydrogel** polymer selected from **alginates**, gums, starch, dextrins, agar, gelatins, casein, collagen, poly(vinyl alc.), polyethylenimine, acrylate polymers, starch-acrylate polymers, or mixts. or copolymers thereof in a gelling solvent, forming a gel from the soln. into a form, replacing the gelling solvent with a crosslinking solvent using a conc. gradient solvent-exchange process, and treating the gel with a crosslinking agent to form porous bodies with a open-celled **three**-dimensional lattice structure, d. <1.0, surface area .gtoreq.30 m2/g, compressibility .ltoreq.10% yield at 10 psi, and av. pore diam. <100 .ANG.. Thus, 5% aq. Na **alginate** soln. was gelled in 0.2 M CaCl2 soln., formed into cubes, treated with aq. 25% acetone, subsequently treated with aq. 50% acetone, then treated with aq. 50% acetone, finally treated with acetone, treated with a mixt. of 2,4-tolylene diisocyanate and triethylamine, heated 16 h at 100-110.degree.to give a crosslinked **hydrogel** material with apparent bulk d. 0.164, surface area 380 m2/g, pore vol. 2.97 cm3/g, and av. pore diam. 365 .ANG..

S.Kaushal

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | WO 9512632 | A2 | 19950511 | WO 1994-US12645 | 19941102 |
| | WO 9512632 | A3 | 19950526 | | |
| | W: JP | | | | |
| | US 5502082 | A | 19960326 | US 1993-148110 | 19931104 |
| | JP 08505431 | T2 | 19960611 | JP 1994-513411 | 19941102 |

L6 ANSWER 15 OF 20 CAPLUS COPYRIGHT 2002 ACS
AN 2000:594144 CAPLUS
DN 133:313591
TI Diffusivity of **three**-dimensional, ionically crosslinked **alginate hydrogels**
SO Polym. Prepr. (Am. Chem. Soc., Div. Polym. Chem.) (2000), 41(2), 1661-1662
CODEN: ACPPAY; ISSN: 0032-3934
AU Kuo, Catherine K.; Ma, Peter X.
AB This work show that ionically crosslinked Ca **alginate** gels formed with controllable mech. properties, homogeneity, swelling behavior and permeability can be tailored specifically for tissue engineering or other biomedical applications.

L6 ANSWER 20 OF 20 CAPLUS COPYRIGHT 2002 ACS
AN 2001:417069 CAPLUS
DN 135:33965
TI Ionically crosslinked **hydrogels** with adjustable gelation time
SO PCT Int. Appl., 29 pp.
CODEN: PIXXD2
IN Ma, Peter X.
AB Biocompatible **hydrogels**, for: scaffoldings for tissue engineering; cell encapsulation matrixes; injectable bulking materials for cosmetic and functional restorations; controlled release matrixes; gene delivery vehicles; immunoprotection matrixes; immobilization materials; food additives; medical gels; conductive electrode gels; lubricious coatings; film forming creams; membranes; superabsorbents; hydrophilic coatings; and wound dressings. The **hydrogels** include: at least one water-sol. polymer/copolymer; and at least one slow and/or fast dissolving and/or releasing divalent and/or multivalent cation-contg. compd. At least one of the monomers is an acid, and/or contains an acid group or a deriv. thereof, e.g., **alginate**. Such monomer reacts with the cations to form a **three**-dimensional ionically crosslinked **hydrogel** compn. A method for prepg. such a compn. comprises the step of controlling a rate of gel formation by varying at least one of: soly. of the cation contg. compds.; cation concn.; mixt. of cation contg. compds.; polymer concn.; gelation temp.

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | WO 2001040370 | A2 | 20010607 | WO 2000-US31635 | 20001117 |
| | W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| | RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | | |

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S.Kaushal